WHAT IS CLAIMED IS:

1.   A method for the localization of sound in three dimensional space comprising measuring the variations which arise from reflections and diffraction effects from pinnae and creating a state space model to synthesize a filter at any position.

2.   The method as claimed in claim 1, wherein the pinnae are calculated by measuring a set of head related transfer functions which correspond to an azimuth and an elevation angle for an ear.

3.   The method as claimed in claim 1, wherein the state space model is used to synthesize multiple head-related transfer function filter simultaneously for multiple angles around the listener.

4.   The method as claimed in claim 1, wherein the state space model is used to synthesize multiple moving sound sources that retain a correct head-related transfer function characteristics at each position in their path of motion.

5.   The method as claimed in claim 1, wherein the state space model is used to synthesize correct head-related transfer functions as a listener's head moves.